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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
3310 El Camino Avenue, Suite 130
Sacramento, California 95821-6340

IN REPLY REFER TO:

October 27, 1997

Mr. Lester A. Snow, Executive Director
CALFED Bay-Delta Program
1416 Ninth Street, Suite 1155
Sacramento, California 95814

Subject: Fish and Wildlife Service (Service) Review of August 1997 Draft Water Quality Program Component Report

Dear Mr. Snow:

We appreciate the opportunity to review and comment on the August 1997 draft Water Quality Program Component Report. We commend CALFED staff for their efforts to develop the Water Quality Program. The general and specific comments and recommendations on the Component Report that follow are intended to assist CALFED develop and improve the Water Quality Program. The Service strongly supports the Bay-Delta Program efforts to protect and improve water quality in the Bay-Delta ecosystem and Sacramento River and San Joaquin River watersheds. We look forward to working with CALFED staff to continue to design and implement this program. If you have any questions about these comments, please contact Douglas Morrison or Thomas Maurer of my staff at (916) 979-2710.

Sincerely,

Wayne S. White
Field Supervisor

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GENERAL COMMENTS AND RECOMMENDATIONS:

The report should address the ecological aspects of salinity, especially restoring and maintaining ecologically "beneficial" salinity patterns in the bay-delta ecosystem. Salinity is correctly listed as an environmental parameter of concern (Table 3.1). Salinity is an important water quality parameter affecting aquatic ecological processes (e.g., productivity) and the distribution and abundance of key species and habitats in the bay-delta (Nichols et al 1986, Science 231: 567-573). However, there is little discussion of the ecological impacts of altered salinity regimes in the bay-delta ecosystem. No actions strategies regarding restoring and/or maintaining ecologically "beneficial" salinity patterns (e.g., X2) are proposed in the report. The report should include a thorough discussion of the ecological importance of salinity patterns, current salinity patterns, the ecological impacts of altered salinity patterns and factors causing these alterations, the proposed ecological restoration "vision" for salinity patterns, and action strategies (including methods, performance measures, and success indicators) to achieve ecologically desirable salinity patterns.

Restoring and maintaining ecologically beneficial salinity patterns may best be addressed through the Ecosystem Restoration Program; but, it also should be an important component in the Water Quality Program. In fact, salinity is not explicitly stated as an ecosystem element in the ERPP. Thus, the need to address it as an important environmental parameter of concern in the Water Quality Report. Salinity is a good example of the need for close coordination and integration between the ecosystem restoration and water quality programs.

Nutrients (nitrogen, phosphorous) should be included as an environmental parameter(s) of concern (Section 3 and Table 3.1). Nutrient loading is discussed throughout the report as a water quality issue and concern. For example, high nutrient levels are listed under water quality issues and concerns on page 2-2. Nutrient loading is discussed in the section on environmental water quality issues and concerns (p. 2-4). Nutrients are listed as a parameter of concern for Suisun marsh wetlands in the CALFED problem area and several other Clean Water Act Section 303(d) listed impaired waterbodies that may affect the CALFED problem area (Appendix D). Nutrient loading is a water quality concern in south San Francisco Bay (Hager and Schemel 1996, pp. 189-215 in San Francisco Bay: The Ecosystem), which also is an impaired waterbody that may affect the CALFED problem area. Thus, nutrients (nitrogen and phosphorous) should be included as an environmental parameter of concern (listed in Table 3.1 and discussed in Section 3).

Furthermore, the Ecosystem Restoration Program Plan (ERPP) states that nutrient processes (e.g., nutrient cycling, primary productivity) are important elements in ecosystem management and restoration. Nutrient processes are an important component of the following ecosystem elements discussed in ERPP: bay-delta aquatic foodweb, natural sediment supply, all of the aquatic and wetland habitats, herbivorous waterfowl (indirectly), invasive aquatic plants, and contaminants. Nutrient dynamics are an

important ecological process in all aquatic ecosystems, especially estuaries. Nutrient dynamics in the bay-delta ecosystem need to be understood and monitored to facilitate successful ecosystem restoration and protection.

A more thorough discussion coordinating the CALFED water quality program with other water quality programs in the solution area, especially San Francisco Bay, is needed. Coordinating scientific and environmental management programs throughout a watershed and adjacent areas is especially important for water quality management. Freshwater flows through the Delta, and thus water management actions, affect water quality in central and south San Francisco Bay (Nichols et al 1986, Science 231: 567-573). The report should give a more complete description of the integration of the CALFED water quality program with existing and proposed water quality programs in the Sacramento River watershed, San Joaquin River watershed, and San Francisco Bay.

CALFED should consider incorporating the ecological/environmental components of the Water Quality Program into the Ecosystem Restoration Program. At minimum, a more complete discussion of the coordination and integration of Water Quality and Ecosystem Restoration programs must be given in the report. Restoring and maintaining good water quality is an essential component of any aquatic ecosystem restoration program. Salinity, toxic contaminants, nutrients, and turbidity are examples of environmental water quality parameters of concern that are also important parameters in the ecosystem restoration program.

SPECIFIC COMMENTS AND RECOMMENDATIONS:

SECTION 3:

Page 3-1, Table 3.1: Light attenuation/penetration or water clarity should be listed (with turbidity or separately) as an environmental parameter of concern. Light attenuation is discussed as a parameter of concern on p. 3-11. Light attenuation is influenced by factors in addition to turbidity. Light extinction coefficient is the preferred measure for this parameter. Secchi disk depth (with corresponding correlation/regression factor with extinction coefficient) would also be an acceptable measure.

Table 3.4, Selenium: For tissue target ranges for Sacramento River, San Joaquin River, and the Delta, we strongly recommend using the no effect range recommended by the San Luis Drain Re-use Technical Advisory Committee, <4 ppm for fish tissue and <3 ppm for food chain organisms (invertebrates). It is not appropriate to set target levels at a higher range (that given in Table 3.4), when actions need to be taken to decrease selenium concentrations.

SECTION 4:

Pages 4-1 to 4-2, Sources of Parameters Subsection: Only metals are discussed in any detail. CALFED should include similar discussions for other parameters listed in the first paragraph.

Page 4-6, Loading Tables: CALFED should include tables for total nitrogen and total phosphorous loadings.

SECTION 5:

Page 5-1: The report presents inaccurate statements about copper toxicity which should be deleted or rewritten. Specifically, the example given on page 5-1 (and E-6) that "an exceedance of copper in the upper Sacramento River during the fall-run chinook salmon juvenile outmigration period might be devastating to the population however, during other times of year (when fall run are not present) there may be virtually no biological impact" is inaccurate and should be deleted or rewritten.

Exceedance of copper objectives can result in toxicity to sensitive life stages of fish and other organisms, including, but not limited to, fall-run chinook salmon. The upper Sacramento River supports fall, late-fall, spring and winter runs of chinook salmon, as well as steelhead trout. The fall, late-fall and winter runs spawn in the upper Sacramento River and juveniles of all four runs and steelhead outmigrate down the river. Resident rainbow trout also spawn in the Sacramento River and its tributaries and occur in the river year round. When all four runs of chinook salmon are considered, as well as steelhead and resident rainbow trout, juvenile salmonids are present in the upper Sacramento River year round. Thus, exceedance of copper objectives at any time of year may have a biological impact to one or more runs of chinook salmon, or to steelhead or resident trout.

Page 5-2, Impaired Water Bodies Subsection: Discussions of Sacramento River Basin and Delta do not seem to adequately address agricultural sources of water quality problems.

Page 5-2, Impaired Water Bodies Subsection, San Francisco Bay: Need to define the part of the bay included in the discussion and the CALFED program (does not include central and south SF bay). You should mention nutrient inputs from wastewater treatment plants.

SECTION 6:

Page 6-3, Wastewater Discharges: This subsection should include a discussion on nitrogen, phosphorous, and organic carbon, the major pollutants discharged from wastewater treatment plants.

SECTION 7:

In general, the methods given under the action strategies should be described more completely.

Action Strategies for Cadmium, Copper, Zinc, and Mercury: Biological success indicators and/or performance measures for actions regarding cadmium, copper, zinc, and mercury should be the same as for selenium: reduce tissue concentrations, or other stress indicators, to levels that are not harmful to animals. Appropriate indicator species should be identified for each metal. If these concentrations or stress indicators are not known then appropriate research should be conducted to determine these concentrations and indicators. The necessary research should be listed under "Methods" or "Performance Measures".

Page 7-4, Action Strategy for Reducing Toxic Effects of Mine Drainage: Describe and give examples of treatment methods to remove metals and neutralize acidity of mine drainage.

Page 7-5, Action strategies for reducing toxic effects of metals and pesticides from urban and industrial runoff: Identify and describe recommended source control methods, especially those for which incentives will be provided.

Page 7-6; Action: "Reduce the toxic effects of nutrient loadings....": Suggest changing to: "Reduce the adverse ecological and toxic effects of nutrient loadings, including oxygen depletion,...."

Actions dealing with sediment loading and turbidity: Ecological indicators of success are needed. Are these covered by Basin Plan objectives for turbidity? Need performance measures and success indicators related to light attenuation/penetration and phytoplankton production.

Page 7-7, Action "Reduce the impacts of domestic wastes": Include ecological impacts (impacts to environmental uses), or formulate a separate action item regarding the ecological impacts of domestic wastewater discharges, including the effects of organic carbon, nitrogen, and phosphorous loading. This would include developing appropriate methods, performance measures, and success indicators regarding ecological impacts. For example, EPA algal bioassay for eutrophication/primary production.

Page 7-8, Action "Reduce the toxic impacts of oxygen depleting substances and ...": Change to: "Reduce the ecological and toxic impacts of oxygen depleting substances, including organic carbon and nutrient loads, and ...". Add EPA algal bioassay for eutrophication to performance measures and indicators of success.

Page 7-8, Action strategy for reducing impacts of municipal waste discharge, "Treatment of municipal wastewater effluent in wetlands": Must use only wetlands specifically constructed for this purpose. These wetlands must be constructed on lands of low or no ecological value. These wetlands would not count toward mitigation requirements or ERPP wetland restoration targets.

Actions for Reducing Impacts from Ammonia and Agricultural Pesticides: Indicators of success for reducing toxicity from ammonia and agricultural pesticides action items should be changed slightly from "improved survival of test organisms in three species toxicity bioassays" to "no likely significant toxicity to aquatic organisms based on three species toxicity bioassays". Otherwise, good indicators.

Page 7-9, Action: Reduce Toxic Effects of Selenium: The success indicator for selenium good and well stated. We recommend using the "no effect" level ecological risk guidelines for selenium from the San Luis Drain Re-Use Technical Advisory Committee, as discussed above in the comments on Table 3.4.